REMARKS

Claims 37-39, 43 and 156-215 are currently pending in this application.

The Office Action expressed the view that US Patent No. 4,333,009 (Stevens) presents an obstacle to the patentability of claims 37-39 and 43 under 35 USC § 103(a).

As understood by the Applicant, Stevens teaches an optical position transducer which provides an optical signal representative of the position of a moveable element (29). The moveable element (29) has light transmitting regions and light obstructing regions which are shaped and positioned to form a binary Gray code. The Stevens transducer includes a coupler (25), which provides a plurality of light pulses to a corresponding plurality of input light conductors (41a, 41b, 41c). The input light conductors (41a, 41b, 41c) conduct their respective light pulses to separate locations closely adjacent to the moveable element (29).

The light pulses from the input conductors (41a, 41b, 41c) impinge on moveable element (29), where some light pulses are transmitted by the light transmitting regions of moveable element (29) and other light pulses are obstructed by the light obstructing regions of moveable element (29). A plurality of output light pulse conductors (57a, 57b, 57c) are arranged in alignment with input light conductors (41a, 41b, 41c) on an opposing side of moveable element (29). Light from one of input light conductors (41a, 41b, 41c) may be transmitted by a light transmitting region of moveable element (29) and may be received by a corresponding one of output light conductors (57a, 57b, 57c). The light pulses received in output light conductors (57a, 57b, 57c) or obstructed by the light obstructing regions of moveable element (29) are combined by output coupler (31) to form an optical position signal representative of the position of moveable element (29).

Claims 37, 38 and 188-207

Claims 37 and 38 recite "A method for switching an input optical signal between any of a plurality of output signal channels in an optical cross-connect switch ..." The Applicant submits that Stevens does not teach or suggest this combination of features. The Applicant submits further that Stevens fails to provide a suggestion or motivation that its teachings could be modified to provide such features.

In the Stevens apparatus, there is a one-to-one correspondence between input light conductors (41a, 41b, 41c) and output light conductors (57a, 57b, 57c). As specifically stated at col. 5, lines 23-27, "... the light pulse conductors **57a-57c**, each of which may comprise an optical fiber guide, terminates (*sic*) closely adjacent the face **51** of the moveable element **29** in alignment with the light pulse conductors **41a-41c**." Further down col. 5, at lines 29-36, Stevens states "... the light pulse conducted by the conductor **41a** is transmitted by the moveable element through the light transmitting region **53d** to the light pulse conductor **57a**. Similarly, the light pulse from the conductor **41b** is transmitted by the aperture or light transmitting region **53b** to the light pulse conductor **57b**. However, the opaque light obstructing region **55** is interposed between the conductors **41c** and **57c** ..."

From these passages, it can clearly be seen that each of the Stevens input conductors (41a, 41b, 41c) has only <u>one</u> corresponding output conductor (57a, 57b, 57c). Accordingly, optical signals in the Stevens apparatus may only be directed from <u>one</u> input conductor to <u>one</u> corresponding output conductor. These passages from Stevens clearly teach away from "switching an input optical signal <u>between any of a plurality of output signal channels</u>" as recited in claims 37 and 38. Accordingly, the Applicant submits that claims 37 and 38 patentably distinguish Stevens.

The Examiner correctly points out that Stevens fails to teach or suggest an "optical cross-connect switch" as recited in claims 37 and 38. The Office Action suggests, however, that Figures 3 and 6 of Stevens comprise optical conductors/fibers that transmit/receive light in switching fashion through openings/reflectors/mirrors.

As explained above, Stevens teaches that the input optical conductors (41a, 41b, 41c) and output light conductors (57a, 57b, 57c) have a one-to-one correspondence. Each of the Stevens input conductors (41a, 41b, 41c) has only <u>one</u> corresponding output conductor (57a, 57b, 57c). The switching action disclosed by Stevens is limited to <u>on/off switching</u> of an optical signal travelling from an input conductor to its corresponding output conductor. Consequently, Stevens actually teaches away from an optical cross-connect switch, as recited in claims 37 and 38. An optical cross-connect switch cross-connects optical signals by switching them <u>between</u> different output signal channels. The recitation of "an optical cross-connect switch" in claims 37 and 38 patentably distinguishes these claims from Stevens.

The Applicant submits that Stevens does not include any suggestion or motivation to modify its teachings to provide "switching an input optical signal between any of a plurality of output signal channels" or to provide an "optical cross-connect switch" as recited in claims 37 and 38. The Stevens apparatus requires that the input light conductors (41a, 41b, 41c) have a fixed one-to-one correspondence with the output light conductors (57a, 57b, 57c). Any switching disclosed by Stevens is limited to on/off switching of an optical signal travelling from an input conductor to its corresponding output conductor. If there was any cross-connecting (i.e. switching of optical signals between different output light conductors (57a, 57b, 57c)), then the Stevens apparatus would not function for the purpose disclosed. Consequently, Stevens does not include any suggestion or motivation to modify its teachings to provide "switching an input optical signal between any of a plurality of output signal channels" or to provide an "optical cross-connect switch" as recited in claims 37 and 38.

For these reasons, the Applicant submits that claims 37 and 38 are allowable over Stevens. As new claims 188-207 depend from claim 38, new claims 188-207 are submitted to be patentable over the prior art of record for at least the reasons expressed above.

Claims 39 and 208-215

Claim 39 recites "A method for switching an optical communication signal emitted from a first optical fiber between any of a plurality of second optical fibers in a cross-connect switch ..." The Applicant submits that Stevens does not teach or suggest this combination of features. The Applicant submits further that Stevens fails to provide a suggestion or motivation that its teachings could be modified to provide such features.

As explained above, there is a fixed one-to-one correspondence between the Stevens input conductors (41a, 41b, 41c) and the Stevens output conductors (57a, 57b, 57c). Optical signals in the Stevens apparatus may only be directed from one input conductor to one corresponding output conductor. Stevens clearly teaches away from "switching an optical communications signal ... between any of a plurality of second optical fibers" as recited in claim 39. Accordingly, the Applicant submits that claim 39 patentably distinguishes Stevens.

Again, the Examiner correctly points out that Stevens fails to teach or suggest an "optical cross-connect switch" as recited in claim 39. For the reasons given above, the Applicant submits that the recitation of "an optical cross-connect switch" patentably distinguishes claim 39 from Stevens.

Based on this reasoning, the Applicant submits that claim 39 is allowable over Stevens. As new claims 208-215 depend from claim 39, new claims 208-215 are submitted to be patentable over the prior art of record for at least the reasons expressed above.

Claims 43 and 156-187

Claim 43 has been amended for clarity in a manner submitted not to affect its scope.

The Office Action has raised Stevens as an obstacle to the patentability of claim 43. The Applicant submits that Stevens fails to teach or suggest "first and second groups of optical fiber switching units, disposed in optically opposing relation, each of the switching units in at least one of said first and second groups further comprising: ... a position encoder..." as recited in claim 43. The Applicant submits further that Stevens does not teach or suggest an "optical cross-connect switch" as recited in claim 43 and that Stevens fails to provide a suggestion or motivation that its teachings could be modified to provide such a feature.

Stevens does teach an optical position transducer. However, the entire Stevens device provides the position measurement function. The Stevens transducer includes a plurality of input optical conductors (41a, 41b, 41c) and a corresponding plurality of output optical conductors (57a, 57b, 57c). In contrast, claim 43 recites "first and second groups of optical fiber switching units, disposed in optically opposing relation, each of the switching units in at least one of said first and second groups further comprising: ... a position encoder ..." The Stevens apparatus requires a plurality of fibers for each encoder, while the switch of claim 43 recites an encoder for each switching unit. Accordingly, the Applicant submits that claim 43 patentably distinguishes Stevens.

Again, the Examiner correctly points out that Stevens fails to teach or suggest an "optical cross-connect switch" as recited in claim 43. For the reasons given above, the Applicant submits that the recitation of an "optical cross-connect switch" patentably distinguishes claim 43 from Stevens.

For these reasons, the Applicant submits that claim 43 is allowable over Stevens and that the rejection of claim 43 under 35 USC § 103(a) should be withdrawn. As new claims 156-187 depend from claim 43, new claims 156-187 are submitted to be patentable over the prior art of record for at least the reasons expressed above.

C nclusions

The Applicant respectfully requests reconsideration and allowance of this application in view of the amendments and remarks presented above.

Respectfully submitted,
OYEN WIGGS GREEN & MUTALA

By: _____
Gavin N. Manning
Registration No.: 36,412
Tel. No.: (604) 669-3432
Fax No.: (604) 681-4081

Vancouver, B.C.
CANADA